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sorbent cotton, the double purpose is served of stimulation of the vessels, causing them to dilate, and of plastering down the hair upon the skin, making the veins and arteries more visible. When the needle is withdrawn the alcohol must be well wiped off before the wound will close. Sometimes when an attempt to enter the median artery is for any reason unsuccessful, the blood will be seen to leave the vessel entirely and remain so for a considerable time, due to contraction of the arterial wall which was probably pricked by the needle. Vigorous rubbing, however, will bring the normal circulation back.

Shaving or sterilizing the ear is unnecessary when it is not desired to preserve the blood for more than immediate use. Several hundred injections and bleedings during the past year or two have shown no ill effects whatever. Rabbits apparently rival avian forms in their resistance to infection. Numerous subcutaneous and intraperitoneal injections without shaving or sterilizing the body surface have not shown a single infection.

A very useful sort of cage, designed by Mr. George H. Bishop for use in this laboratory, makes it simple for one to perform injections and bleedings alone. A box about eleven inches long, four and a half wide, and six and a half deep (inside measurements), has a stock at the front end, the upper half of which operates in a slot, and which may be fastened so as to allow an opening of any desired size, through which the animal's head and neck protrude. A hinged top prevents kicking up behind. Rabbits take very quietly to this temporary confinement once they are placed inside the box, and are not then able to jump and misdirect the needle so easily as when one is attempting to hold the animal. This cage is here illustrated.

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ADSORPTION BY SOIL COLLOIDS

(PRELIMINARY PAPER)

FOR some time we have been working on the adsorption of soil colloids. We believed that this problem could best be solved by preparing these soil colloids separately in the purest possible condition, and then trying each colloid with the nine following respective salts: potassium nitrate, potassium sulphate, potassium acid phosphate, calcium nitrate, calcium sulphate, calcium acid phosphate, magnesium nitrate, magnesium sulphate, magnesium acid phosphate.

The individual salts have been tried on silica, aluminium, and iron gels, and the humus is now in the process of preparation. We have worked on the adsorption of each ion separately. A few results are given to show the trend of the work.

ADSORPTION BY SILICA GEL

Conc.	Mg. of Ca Adsorbed per Gram of Gel	Mg. of PO_4 Adsorbed per Gram of Gel
N/10	— 0.013	0.358
N/20	— 0.034	0.114
N/40	0.032	0.037
N/400	0.023	0.045

ADSORPTION BY IRON GEL

Conc.	Mg. of Mg. Adsorbed per Gram of Gel	Mg. of SO_4 Adsorbed per Gram of Gel
N	9.7	31.9
N/5	8.0	30.7
N/10	5.7	28.3
N/20	4.3	23.2

ADSORPTION OF ALUMINIUM GEL

Conc.	Mg. of P_2O_5 Adsorbed per Gram of Gel in 1 Week	2 Weeks	4 Weeks	6 Weeks
N/10	261.0	291.5	338.0	385.5
N/20	221.5	256.7	281.0	317.0
N/40	186.3	191.1	197.3	210.5

There was less than the equivalent amount of calcium adsorbed at the various concentrations.

ADSORPTION OF SILICA GEL AT VARIOUS P_H VALUES

P_h Value	Mg. of K Adsorbed per Gram of Gel
3.888	— 0.68
6.086	1.74
7.692	6.56
9.501	9.62

We have also varied hydrogen ion concentration and followed the adsorption curves for the respective ions with the idea of show-

ing some relation between the acidity of the soil and adsorption. This work is giving most interesting results.

Many of these results speak for themselves, but a discussion together with a full report of all results is being published elsewhere.

Neil E. Gordon,
R. C. Wiley,
E. B. Starky,
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THE AMERICAN CHEMICAL SOCIETY.

(*Continued*)

Luminescence of parabromophenyl magnesium bromide and related compounds: W. V. Evans and R. T. Rufford.

A simplified titrating hydrogen electrode and its use in a plant laboratory: Felix A. Elliott. The hydrogen electrode previously described by the author has been modified for use in titrations. It has been possible to meet the three important conditions of (1) working in a hydrogen atmosphere, (2) efficient and quick mixture of the solution being titrated with the acid, alkali or other solution, and (3) eliminating the contact potential and at the same time maintaining a constant volume of the solution under investigation, without undue complications in the design and without mechanical agitation. The internal resistance of the cell has been kept very low, thus insuring ample sensibility with the more rugged types of measuring instruments. The apparatus is portable. When fitted with platinized platinum electrodes this cell may be used to determine the content of lime and magnesia in limestone, the amount of acid or alkali in various plant liquors, examples being given. With bright platinum electrodes the cell may be used for such titrations as I with sodium thiosulphate, Fe with sodium dichromate and other titrations involving similar reactions with a change in the charge on one of the ionic species in solutions.

High frequency ozone production: F. O. Anderegg. To eliminate the dielectric, which is the greatest weakness with commercial ozonizers, advantage was taken of the fact that it is impossible to maintain a high frequency arc. An aluminium tube 5 x 190 cm. with a concentric wire was used for the discharge. Current was supplied up to half an ampere and 7000 volts at about a million and a half cycles frequency by a small Tesla coil which was designed so as to give the best discharge with the tube used. The highest yields were secured with a rather large wire provided with numerous small points so that the discharge should be made up of many brushes. The ozonized air contained but small amounts of nitrous oxides although on raising the voltage till the discharge was filled with sparks about 0.02 per cent. was obtained. Numerous curves have been worked out showing the relationships between the different variables which are usually similar to those obtained in low frequency ozone production. Maximum concentration was 15 gram per cubic meter. The greatest efficiency obtained was 17 gram per kilowatt hour which in view of the wasteful method of producing the high frequency current is encouraging.

The reaction between tungsten and hydrocarbon vapors: Saul Dushman.

The activity of ions in mixed electrolytes: C. E. Ruby, T. W. Bartram and Y. L. Yeh. The electromotive-force of cells of the type H_2 (1 atm.), HCl (c_{10}) + MCl (c_2), AgCl, Ag were measured, in which MCl was, in the two sets of experiments, KCl and NaCl respectively, and the sum of the weight-normal concentrations ($c_1 \pm c_2$), was held constant in each set of measurements, c_1 being varied ten-thousand-fold. Four sets of measurements were made, employing the values of .2, and 1.0 weight-normal for the sum of c_1 and c_2. The results obtained in these experiments are interpreted in the light of the theory of independent ion-activity.

The atomic structure: Upon the subtlety of directed particle motion hang all the properties of matter: H. K. Kipper. By our theory we postulate that: Light is a wave motion of the particles of the ether. Electricity is a helical or screw motion of the particles of the ether (whether atomic or unorganized). Magnetism is a compensated helical or screw motion of particles. Gravity is a function of rotatory motion. Chemical affinity or valency is based on the forces derived from the specific groups of electrons. Solution affinity is based on the forces derived from all groups—that is, such forces taken as a field. All atomic forces are mechanically or mathematically derivable and interpretable from motions of particles in themselves representing simply energy and matter.

The cryoscopy of boron trifluoride solutions: VI: System with methyl chloride: Albert F. O. Germann and Marion Cleaveland. P. F. G. Boullay